

CLAIMS:

1. A method for starting an internal combustion engine with electromechanically actuated valves, the method  
5 comprising:  
determining a target cylinder air amount, for  
at least a cylinder, based on at least an operating  
condition of said engine; and  
adjusting valve timing, during engine cranking  
10 or run-up, of a cylinder to provide said target cylinder  
air amount.
2. The method of Claim 1 wherein said at least an  
operating condition of an engine is a temperature of said  
15 engine.
3. The method of Claim 1 wherein said at least an  
operating condition of an engine is a temperature of  
ambient air.  
20
4. The method of Claim 1 wherein said at least an  
operating condition of an engine is a desired engine  
torque amount.
- 25 5. The method of Claim 1 wherein said at least an  
operating condition of said engine is barometric  
pressure.

6. A method for starting an internal combustion engine with electromechanically actuated valves, the method comprising:

5 determining a target cylinder air amount, for at least a cylinder, based on a number of fueled cylinder events;

inducting said target cylinder air amount by adjusting intake valve timing;

10 injecting a fuel amount based on said target cylinder air amount into said at least a cylinder; and combusting said fuel in said cylinder.

7. A method for starting an internal combustion engine with electromechanically actuated valves, the method comprising:

15 determining a target cylinder fuel amount based on a number of fueled cylinder events;

inducting a cylinder air amount based on said target cylinder fuel amount by adjusting intake valve timing;

20 injecting fuel into cylinders; and combusting said fuel in said cylinders.

8. The method of Claim 7 wherein said target cylinder fuel amount is further based on a temperature of said engine.

9. The method of Claim 7 wherein said intake valve timing is further adjusted based on a temperature of said intake valve.

10. The method of Claim 7 wherein said injected fuel produces a lean air-fuel mixture.

11. The method of Claim 7 wherein said injected fuel produces a rich air-fuel mixture.

12. The method of Claim 7 wherein spark advance of said engine is adjusted based on said cylinder air amount.

13. The method of Claim 7 wherein said fuel is injected directly into said cylinders.

14. The method of Claim 7 wherein said fuel is injected into the respective intake ports of said cylinders.

15. The method of Claim 7 wherein said intake valve timing is further adjusted based on ambient air temperature and pressure.

16. A method for starting an internal combustion engine with electromechanically actuated valves, the method comprising:

20           processing a signal indicative of a request to start said engine;

                  determining the position of said engine in response to said signal;

                  determining a target cylinder fuel amount based on a number of cylinder events after determining said engine position;

                  inducting a cylinder air amount based on said target cylinder fuel amount by adjusting intake valve timing;

30           injecting fuel into cylinders based on said target cylinder air amount; and

                  combusting said fuel in said cylinders.

17. The method of Claim 16 wherein said target cylinder air amount is further based on a temperature of said engine.
- 5 18. The method of Claim 16 wherein said intake valve timing is further adjusted based on a temperature of said intake valve.
19. The method of Claim 16 wherein said injected fuel  
10 produces a lean air-fuel mixture.
20. The method of Claim 16 wherein said injected fuel produces a rich air-fuel mixture.
- 15 21. The method of Claim 16 wherein spark advance of said engine is adjusted based on said target cylinder air amount.
22. The method of Claim 16 wherein said fuel is injected  
20 directly into said cylinders.
23. The method of Claim 16 wherein said fuel is injected into the respective intake ports of said cylinders.
- 25 24. The method of Claim 16 wherein said intake valve timing is further adjusted based on ambient air temperature and pressure.

25. A method for starting an internal combustion engine with electromechanically actuated valves, the method comprising:

processing a signal indicative of a request to  
5 start said engine;

closing at least an exhaust valves of said engine;

determining the position of said engine in response to said signal;

10 determining a target cylinder fuel amount for at least a cylinder of said engine;

inducting a cylinder air amount based on said target cylinder fuel amount by adjusting intake valve timing;

15 injecting fuel into said at least a cylinder; combusting said fuel in said at least a cylinder; and operating said at least an exhaust valve after said combustion in said at least a cylinder.

20 26. A computer readable storage medium having stored data representing instructions executable by a computer to control an internal combustion engine of a vehicle, said storage medium comprising:

instructions for determining a target cylinder  
25 air amount, for at least a cylinder, based on at least an operating condition of said engine; and

adjusting valve timing, during engine cranking and run-up, of a cylinder based on said target cylinder air amount.